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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/751,498	01/06/2004	Kazutoshi Yogo	14-023	3333

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EXAMINER	
RASHID, MAHBUBUR	
ART UNIT	**PAPER NUMBER**
3683	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/751,498	YOGO ET AL.	
	Examiner	Art Unit	
	Mahbubur Rashid	3683	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *01/06/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. An information disclosure statement (IDS) was submitted on 01/06/2004. Accordingly, the examiner has considered the information disclosure statement, see attached 1449.

Specification

2. The abstract of the disclosure is objected to because it contains over 150 words. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1-8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yonemura et al. (US 6,024,420) in view of Kobayashi et al. (US 6,402,260 B1).

5. Regarding **claim 1**, Yonemura discloses a hydraulic braking apparatus (see col. 1, lines 21-26 and 48-55) which generates a braking force to a wheel (see col. 1, lines 21-26 and 48-55) using a brake fluid pressure (see col. 1, lines 21-26 and 48-55), which comprises:

a switching reservoir (see fig. 30, element 20) provided with a reservoir chamber (see fig. 30, within element 20; see also col. 11, line 33) which reserves the brake fluid (see col. 11, lines 30-47), a reservoir port (see fig. 30, within element 20; see also col. 11, element 26 in line 35) through which the brake fluid (see col. 11, lines 30-63) flows in and out of the reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33), and a connection port (see fig. 30, within element 20; see also col. 11, element 25 in line 50) with a valve (see fig. 30, within element 20; see also col. 11, element 21 in line 55) which is opened when the amount of the brake fluid (see col. 11, lines 30-47; also see col. 12, line 62- col. 13, line11) which is reserved in the reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33) is less than a predetermined amount (see col. 12, line 62- col. 13, line11) and is closed when the amount of the brake fluid (see col. 11, lines 30-47; also see col. 12, line 62- col. 13, line11) which is reserved in the reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33) is equal to or greater than the predetermined amount (see col. 12, line 62- col. 13, line11) and through which the brake fluid flows (see col. 11, lines 30-47) in and out of the reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33) when the valve (see fig. 30, element 21) is in an open state (see col. 12, line 62- col. 13, line11);

a pump (see fig. 30, element 15) which has an intake port (see fig. 30, element 15) of which is connected to the reservoir port (see fig. 30, within element 20; see also col. 11, element 26 in line 35) of the switching reservoir (see fig. 30, element 20);

a motor (see col. 6, lines 9-11) which drives the pump (see fig. 30, element 15).

Regarding **claim 1**, Yonemura discloses all claimed elements as set forth above but fails to explicitly disclose a driving apparatus that controls a duty ratio of a motor.

Kobayashi discloses a similar brake system and further teaches duty ratio-determining unit (see fig. 2, element 22; also see col. 1, lines 57-59) that controls a duty ratio of a motor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the discloser of Yonemura with the teachings of Kobayashi to improve the accuracy of the rotation speed of the motor and compensate for various voltage conditions.

Regarding **claim 3**, Yonemura in combine with Kobayashi disclose the hydraulic braking apparatus (see col. 1, lines 21-26 and 48-55) according to claim 2, wherein the driving apparatus controls the duty ratio, in accordance with a voltage which is applied to the motor, such that the duty ratio decreases as the voltage increases. Also see fig. 3; also see col. 6, line 64 – col. 7, line 17 of Kobayashi. In order to maintain a particular speed the duty ratio must decrease as voltage increase.

Regarding **claim 5**, Yonemura in combine with Kobayashi disclose the hydraulic braking apparatus (see col. 1, lines 21-26 and 48-55) according to claim 2, wherein the driving apparatus controls the duty ratio, in accordance with a brake fluid pressure (see col. 36, lines 35-43) which acts on a discharge port (see fig. 30, element 15) of the pump (see fig. 30, element 15), such that the duty ratio increases as the brake fluid pressure increases. Also see fig. 5 of Kobayashi. In order to maintain a particular speed the duty ratio must increase as the brake fluid pressure increase.

6. Regarding **claim 2**, Yonemura discloses a hydraulic braking apparatus (see col. 1, lines 21-26 and 48-55) comprising:

a master cylinder (see fig. 30, element 3) which generates a master cylinder pressure (see col. 35, line 35 the element PU) by a braking operation (see col. 4, lines 61-64) performed by a driver (see col. 4, line 61);

a wheel cylinder (see fig. 30, elements 4 and 5) which generates a braking force to a wheel (see col. 4, lines 34-39);

a first brake conduit (see fig. 30, element A1) that connects the master cylinder (see fig. 30, element 3) and the wheel cylinder (see fig. 30, element 4);

a pressure increase control valve (see fig. 30, element 31) which is disposed between the master cylinder (see fig. 30, element 3) and the wheel cylinder (see fig. 30, element 4) in the first brake conduit (see fig. 30, element A2) and communicates or disconnects the first brake conduit (see fig. 30, element A2);

a switching reservoir (see fig. 30, element 20) provided with a reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33) which reserves the brake fluid (see col. 11, lines 30-47), a reservoir port (see fig. 30, within element 20; see also col. 11, element 26 in line 35) through which the brake fluid (see col. 11, lines 30-63) flows in and out of the reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33), and a connection port (see fig. 30, within element 20; see also col. 11, element 25 in line 50), which is connected between the master cylinder (see fig. 30, element 3) and the increase control valve (see fig. 30, element 31)

via a second brake conduit (see fig. 30, within element 20; see also col. 11, element 25 in line 50) with a valve (see fig. 30, within element 20; see also col. 11, element 21 in line 55) which is opened when the amount of the brake fluid (see col. 11, lines 30-47; also see col. 12, line 62- col. 13, line11) which is reserved in the reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33) is less than a predetermined amount (see col. 12, line 62- col. 13, line11) and is closed when the amount of the brake fluid (see col. 11, lines 30-47; also see col. 12, line 62- col. 13, line11) which is reserved in the reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33) is equal to or greater than the predetermined amount (see col. 12, line 62- col. 13, line11) and through which the brake fluid flows (see col. 11, lines 30-47; also see col. 12, line 62- col. 13, line11) in and out of the reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33) when the valve (see fig. 30, within element 20; see also col. 11, element 21 in line 55) is in an open state (see col. 12, line 62- col. 13, line11);

a pressure decrease control valve (see fig. 30, element 33) which communicates and disconnects a third brake conduit (see fig. 30, element 33) that connects the wheel cylinder (see fig. 30, element 4) and the reservoir port (see fig. 30, within element 20; see also col. 11, element 26 in line 35);

a pump (see fig. 30, element 15) that sucks up the reserved brake fluid (see col. 11, lines 30-47) from the reservoir port (see fig. 30, within element 20; see also col. 11, element 26 in line 35), and discharges the brake fluid (see col. 11, lines 30-47) to the

first brake conduit (see fig. 30, element A2) between the master cylinder (see fig. 30, element 3) and the pressure increase control valve (see fig. 30, element 31);

a motor (see col. 6, lines 9-11) which drives the pump (see fig. 30, element 15).

Regarding **claim 2**, Yonemura in combine with Kobayashi disclose all claimed elements as set forth above but fails to explicitly disclose a driving apparatus that controls a duty ratio of a motor.

Kobayashi discloses a similar brake system and further teaches duty ratio-determining unit (see fig. 2, element 22; also see col. 1, lines 57-59) that controls a duty ratio of a motor.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the discloser of Yonemura with the teachings of Kobayashi to improve the accuracy of the rotation speed of the motor and compensate for various voltage conditions.

Regarding **claim 4**, Yonemura in combine with Kobayashi disclose the hydraulic braking apparatus (see col. 1, lines 21-26 and 48-55) according to claim 2, wherein the driving apparatus controls the duty ratio, in accordance with a voltage which is applied to the motor, such that the duty ratio decreases as the voltage increases. Also see fig. 3; also see col. 6, line 64 – col. 7, line 17 of Kobayashi. In order to maintain a particular speed the duty ratio must decrease as voltage increase.

Regarding **claim 6**, Yonemura in combine with Kobayashi disclose the hydraulic braking apparatus (see col. 1, lines 21-26 and 48-55) according to claim 2, wherein the driving apparatus controls the duty ratio, in accordance with a brake fluid pressure (see

col. 36, lines 35-43) which acts on a discharge port (see fig. 30, element 15) of the pump (see fig. 30, element 15), such that the duty ratio increases as the brake fluid pressure increases. Also see fig. 5 of Kobayashi. In order to maintain a particular speed the duty ratio must increase as the brake fluid pressure increase.

Regarding **claim 7**, Yonemura in combine with Kobayashi disclose the hydraulic braking apparatus (see col. 1, lines 21-26 and 48-55) according to claim 2, wherein the driving apparatus controls the duty ratio, in accordance with a fluid pressure (see col. 35, lines 34-39) of the master cylinder (see fig. 30, element 3) which acts on a discharge port (see fig. 30, element 15) of the pump (see fig. 30, element 15), the duty ratio decreases as the fluid pressure of the master cylinder decreases. Also see fig. 5 of Kobayashi. In order to maintain a particular speed the duty ratio must decrease as the fluid pressure of the master cylinder decrease.

Regarding **claim 8**, Yonemura in combine with Kobayashi disclose the hydraulic braking apparatus (see col. 1, lines 21-26 and 48-55) according to claim 7, wherein when the brake fluid (see col. 11, lines 30-63) is sucked up (see col. 36, lines 30-34) by the pump (see fig. 30, element 15) through the reservoir port (see fig. 30, within element 20; see also col. 11, element 26 in line 35) and the amount of the brake fluid (see col. 11, lines 30-63; also see col. 12, line 62- col. 13, line11) in the reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33) decreases to less than the predetermined amount (see col. 12, line 62- col. 13, line11; also see col. 36, lines 35-43), the valve (see fig. 30, within element 20; see also col. 11, element 21 in line 55) is changed to be in an open state (see col. 34, lines 35-43), the brake fluid (see col. 11,

lines 30-63) flows in the reservoir chamber (see fig. 30, within element 20; see also col. 11, element 27 in line 33) from the master cylinder (see fig. 30, element 3) through the valve (see fig. 30, within element 20; see also col. 11, element 21 in line 55) and the brake fluid (see col. 11, lines 30-63) that has flowed in is sucked up by the pump (see fig. 30, element 15) through the reservoir port (see fig. 30, within element 20; see also col. 11, element 26 in line 35).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Zhan (US 6,188,947 B1) discloses a closed loop speed control of ABS pump motor utilizing variable duty cycle and frequency; Hachtel (US 6,299,260 B1) discloses a method and device for controlling a pump in a brake system where the pump can be controlled by a pump motor either uncycled or continuously and cycled; Toda et al. (US 5,743,598) discloses an anti-skid control apparatus that is operated to connect a wheel cylinder to a reservoir via a return fluid passage so that brake fluid will be stored in the reservoir to reduce the pressure.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mahbubur Rashid whose telephone number is (571) 272-7218. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful; the examiner's supervisor, James S. McClellan can be reached on (571) 272-6786. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

mhr

JAMES MCCLELLAN
SUPERVISORY PATENT EXAMINER
2/9/07